

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

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Listing of Claims:

1. (original) A process comprising:

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(A) a stage of at least partially separating a hydrocarbon feed comprising branched aliphatic hydrocarbons having from about 8 to about 20 carbon atoms, into

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- at least one branched-enriched stream comprising an increased proportion of branched acyclic hydrocarbons relative to said hydrocarbon feed and optionally, one or more of:
- a linear-enriched stream comprising an increased proportion of linear aliphatic hydrocarbons relative to said hydrocarbon feed; and
- a reject stream comprising cyclic and/or aromatic and/or ethyl- or higher-branched hydrocarbons;

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wherein said stage (A) comprises:

- providing said hydrocarbon feed; and
- adsorptive separation of said feed into said streams using porous media;

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said stage (A) using simulated moving bed adsorptive separation means comprising both of:

- at least one bed holding said porous media; and
- a device for simulating motion of said porous media countercurrent to a hydrocarbon stream in said bed;

(B)

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(i) at least partially dehydrogenating the branched-enriched stream of stage (A) thereby forming an olefinic branched-enriched stream comprising mono-olefin, optionally followed by one or more of

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- (ii) treating said olefinic branched-enriched stream to diminish the content therein of diolefin impurities and
- (iii) treating said olefinic branched-enriched stream to diminish the content therein of aromatic impurities;

- 70 (C) optionally, at least partially concentrating said mono-olefins in said olefinic branched-enriched stream of stage (B) by means of sorptive separation using a known sorbent or porous media provided that said sorbent or porous media are nonidentical with the porous media of stage (A) and are adapted for olefin / paraffin separations and, optionally, concurrently recycling paraffins to said dehydrogenation stage (B); and
- 75 (D) reacting said olefinic branched-enriched stream produced in stage (B) or, optionally, as further concentrated in stage (C), with carbon monoxide and hydrogen in the presence of an OXO catalyst, thereby forming a modified primary OXO alcohol.

2. (original) A process according to Claim 1 meeting at one least one of the following requirements:

5 said stage (A) means comprise one, two or more of said devices and at least two of said beds, at least one of said beds comprising said porous media differentiated relative to the porous media contents of another of said beds by an increased capacity to retain methyl-branched acyclic aliphatic hydrocarbons; and

10 said stage (D) is a one-step OXO stage wherein said OXO catalyst is a phosphine-coordinated transition metal other than iron.

3. (original) A process according to Claim 2 wherein at least one of said beds comprises porous media conventional for the manufacture of linear alkylbenzenes; said at least one bed having a connection into said process suitable for at least partially increasing the proportion of methyl-branched acyclic aliphatic hydrocarbons in streams passing to said stage (B) of said process, and suitable for at least partially decreasing the proportion of linear acyclic aliphatic hydrocarbons passing to said stage (B) of said process, said linear acyclic aliphatic hydrocarbons being at least partially being removed as said linear-enriched stream in said stage (A).

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4. (original) A process according to Claim 3 wherein said simulated moving bed adsorptive separation means in said stage (A) comprise

- 5 - one of said device, provided that said device is capable of simulating movement of said porous media in at least two of said at least one bed; or
 - at least two of said device.

5 5. (original) A process according to Claim 4 wherein there are two of said at least one bed, each comprising a different member of said porous media, each of said at least one bed being controlled by one of said device, and each of said device having a minimum of eight ports for achieving simulated movement of said porous media in said at least one bed.

6. (original) A process according to Claim 4 wherein said linear-enriched stream is present in said stage (A) and said stage (A) comprises:

5 (A-i) adsorptive separation of said hydrocarbon feed into said linear-enriched stream and an intermediate branched-enriched stream and rejection of said linear-enriched stream by means of one of said simulated moving bed adsorptive separation means; followed by

10 (A-ii) adsorptive separation of said intermediate branched-enriched stream into said branched-enriched stream comprising an increased proportion of branched acyclic aliphatic hydrocarbons relative to said intermediate branched-enriched stream, and said reject stream comprising at least an increased proportion of cyclic and/or aromatic hydrocarbons relative to said branched-enriched stream, by means of another of said simulated moving bed adsorptive separation means.

5 7. (original) A process according to Claim 2 wherein all of said beds comprises porous media not conventional for the manufacture of linear alkylbenzenes; said porous media having pore sizes suitable for, and being connected into said process, in a manner consistent with at least partially increasing the proportion of methyl-branched plus linear acyclic aliphatic hydrocarbons in streams passing to said stage (B) of said process, and at least partially decreasing the proportion of cyclic, aromatic and/or ethyl-branched or higher, aliphatic hydrocarbons passing to said stage (B) of said process, said hydrocarbons other than said linear- and methyl-branched hydrocarbons being at least partially being removed as a reject stream in said stage (A).

8. (original) A process according to Claim 3 wherein said hydrocarbon feed comprises at least about 10% methyl-branched paraffins having molecular weight of at least about 128 and no more than about 282.
9. (original) A process according to Claim 3 wherein prior to stage (D) a distillation step is present, whereby said distillation produces a narrow cut of not more than about three carbon atoms (preferably not more than about two carbon atoms) in the range C10 to C17 in said olefinic branched enriched stream.
10. (original) A process according to Claim 9 whereby either said hydrocarbon feed or said olefinic branched enriched stream is subjected to said distillation step.
11. (original) A process according to Claim 3 wherein said hydrocarbon feedstock is an adsorptive separation raffinate deriving from a linear alkylbenzene manufacturing process or conventional linear detergent alcohol process.
12. (original) A process according to Claim 3 having the additional step or steps in sequence selected from:
 - (E) sulfating and neutralizing the product of said stage (D);
 - (F) alkoxyating the product of said stage (D); and
 - 5 (G) alkoxyating, sulfating and neutralizing the product of said stage (D).
13. (original) A process according to Claim 12 having the additional stage of (H) mixing the product of the preceding steps with one or more cleaning product adjunct materials; thereby forming a cleaning product.
14. (withdrawn) Modified primary OXO alcohol produced by a process according to Claim 1.
15. (withdrawn) Consumer cleaning product containing a surfactant produced by a process according to Claim 12 followed by a step of admixing at least one cleaning product adjunct ingredient.

16. (original) A process according to Claim 1 wherein prior to said OXO stage, (D), the product of said stage (B) or (C) is blended with a conventional detergent olefin.
17. (original) A process according to Claim 12 wherein the product of any of said stages (E), (F) or (G) are blended with a conventional deterative surfactant.
18. (original) A process according to Claim 1 further comprising at least one stage of reacting the product of stage (B) with an aromatic hydrocarbon selected from the group consisting of benzene, toluene and mixtures thereof in the presence of an alkylation catalyst.
19. (original) A process according to Claim 18 wherein said alkylation catalyst has an internal isomer selectivity of from 0 to 40.
20. (original) A process according to Claim 18 wherein means are provided to route the product of stage (C) to stage (D), or to said alkylation step, or to both of said stages in parallel.
21. (withdrawn) The product of Claim 12.
22. (withdrawn) A detergent or cleaning composition comprising
 - (a) an effective amount of a deterative surfactant selected from alkyl sulfates, alkylpoly(alkoxy)sulfates, alkylpoly(alkoxylates) and mixtures thereof, said surfactant incorporating the R-O- radical of an R = C9-C20 detergent alcohol of formula ROH, wherein R is mixtures of methyl branched and some linear chains and said alcohol is further characterized in that it comprises the product of at least one Fischer-Tropsch process stage or an oligomerization or dimerization or skeletal isomerization stage or paraffin provision stage, and at least one OXO process stage; provided that in at least one step prior to said OXO process stage there is present a sorptive separation stage having the effect of increasing the proportion of methyl-branched olefin used as feed in said OXO process stage; and
 - (b) one or more adjuncts at least partially contributing to the useful properties of the composition.

23. (withdrawn) A detergent or cleaning composition according to claim 22 wherein R is selected from mixtures of mid-chain methyl branched and some linear chains.

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24. (withdrawn) A detergent or cleaning composition comprising
- (a) an effective amount of a deterative surfactant selected from alkyl sulfates, alkylpoly(alkoxy)sulfates, alkylpoly(alkoxylates) and mixtures thereof, said surfactant incorporating the R-O- radical of an R = C9-C20 detergent alcohol of formula ROH, wherein R is mixtures of methyl branched and some linear chains and said alcohol is further characterized in that it comprises the product of a process according to Claim 1; and
 - (b) one or more adjuncts at least partially contributing to the useful properties of the composition.